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07/18/2003

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EXAMINER

YUN, JURIE

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 07/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/024,064

Applicant(s)

FERRANDINO ET AL.

Examiner

Jurie Yun

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 June 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10,27-50,52,54 and 55 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-5,7-10,36,38-49,54 and 55 is/are allowed.
- 6) ☒ Claim(s) 6,27,29-35,37,50 and 52 is/are rejected.
- 7) ☒ Claim(s) 28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. The amendment filed 6/10/03 has been entered and claims 51 and 53 have been cancelled.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 6 and 50 have been considered but are moot in view of the new ground(s) of rejection.
3. The previous statement of allowability of independent claims 27 and 37 and their dependent claims has been withdrawn.

### ***Claim Objections***

4. Claim 29 is objected to because of the following informalities: the embodiment claimed in claim 29, as dependent on claim 27, is not shown in the drawings. The specification and drawings do not support an X-ray source with an aperture disposed on the second end of the X-ray source. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6, 37, 50, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake et al. (USPN 5,848,119) in view of Satoh (USPN 5,937,026).

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7. With respect to claims 6 and 52, Miyake et al. disclose a microscopic X-ray fluorescence system comprising: an X-ray source (Fig. 3, 41); an X-ray focusing element (42 & 43) with an input and an output end, the input end vacuum sealed to the X-ray source; and a substantially X-ray opaque aperture (51) vacuum sealed to the output end of the focusing element, the aperture substantially blocking unfocused X-rays, while allowing substantially complete transmission of focused X-rays (column 7, lines 10-21). The aperture and X-ray focusing element are housed together in a vacuum container (56).

Miyake et al. do not disclose capillary optics or the aperture having a tapered through opening with a larger opening of the tapered opening in proximity to the output end of the focusing element. Satoh discloses capillary optics (3) and an aperture (5) with a tapered through opening with a larger opening of the tapered opening in proximity to the output end of the focusing element (3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the Miyake et al. focusing element (42 & 43) and aperture (51) with the Satoh capillary optics (3) and aperture (5) in order to enable micro fluorescence analysis with excellent effects such as close approach, elimination of beam broadening, and enhanced angle characteristic, as taught by Satoh (column 4, lines 10-18).

8. With respect to claim 50, Miyake et al. disclose an aperture (51) in an microscopic X-ray fluorescence system comprising: an input end; an output end; an X-ray transparent vacuum seal at the output end, the input end connectable to an X-ray focusing element (42 & 43) of the X-ray fluorescence system, the aperture to

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substantially block unfocused X-rays in the X-ray fluorescence system (column 7, lines 10-21).

Miyake et al. do not disclose an aperture with a tapered through passage connecting the input end and the output end, the through passage having a wider input end and a narrower output end. Satoh discloses an aperture (5) with a tapered through passage connecting the input end and the output end, the through passage having a wider input end and a narrower output end. It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the Miyake et al. aperture (51) with the Satoh aperture (5) to enable micro fluorescence analysis with excellent effects such as close approach, elimination of beam broadening, and enhanced angle characteristic, as taught by Satoh (column 4, lines 10-18).

9. With respect to claim 37, Miyake et al. disclose an X-ray path (Fig. 3, 49) in a microscopic X-ray fluorescence system, the path comprising: an X-ray detector (45-46-47); a detector aperture (51) vacuum sealed to the X-ray detector. Miyake et al. do not specifically disclose a vacuum source connectable to the X-ray path for evacuating the path; however, this would be inherent since the whole system, including the X-ray path, is in a vacuum container (56).

10. Claims 27 and 29-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake et al. (USPN 5,848,119).

11. With respect to claims 27 and 31, Miyake et al. disclose an X-ray fluorescence system comprising: an X-ray element (42 & 43) with a first end and a second end; an aperture (51) disposed on the second end of the element. The X-ray element (42 & 43)

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is an X-ray focusing element. Miyake et al. do not disclose a vacuum source connectable to the aperture (51) for evacuating the aperture. However, Miyake et al. disclose the whole system to be in a vacuum container (56) to include the aperture. It would have been obvious to one of ordinary skill in the art at the time of the invention to have a vacuum source connectable to the aperture for evacuating the aperture since this is functionally equivalent; both apertures are in vacuum.

12. With respect to claim 29, Miyake et al. disclose the X-ray element is an X-ray source (41).

13. With respect to claim 30, Miyake et al. disclose the X-ray element is an X-ray detector (45-46-47).

14. With respect to claim 32, Miyake et al. disclose the aperture (51) is vacuum sealed to the X-ray element (42 & 43) since these elements are housed together in vacuum (56).

15. With respect to claims 33-35, Miyake et al. disclose an X-ray source (41) vacuum sealed to the first end of the X-ray element (42 & 43) since these elements are housed together in vacuum (56). Miyake et al. also disclose a vacuum source connectable to the X-ray source for evacuating the X-ray source, and the vacuum source being connectable to the aperture and the vacuum source connectable to the X-ray source are the same vacuum source, since these elements are all housed together in vacuum (56).

***Allowable Subject Matter***

16. Claim 28 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the

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base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: Prior art fails to disclose the sample maintained at atmospheric pressure in the system of claim 27.

17. Claims 1-5, 7-10, 36, 38-49, 54, and 55 are allowed.

18. The reasons for allowance for claims 43-49, 54 and 55 were cited in previous office actions. The following is an examiner's statement of reasons for allowance: Prior art fails to disclose an aperture disposed on the output end of the focusing element so as to substantially block unfocused halo-producing X-rays as claimed in claims 1, 7, and 36. Prior art fails to disclose an aperture cooperating with the detector to provide an X-ray path, the X-ray path having X-ray transmissive characteristics that differ from atmospheric X-ray transmissive characteristics at or around the fluoresced sample, as claimed in claim 38.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jurie Yun whose telephone number is 703 308-3535. The examiner can normally be reached on Monday-Friday 8:30-5:00pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on 703 308-4858. The fax phone numbers for the

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organization where this application or proceeding is assigned are 703 308-7722 for regular communications and 703 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0956.

Jurie Yun  
July 14, 2003

  
EDWARD J. GLICK  
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